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FLUID OPERATED ZIPPER

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ABSTRACT OF THE DISCLOSURE

A fluid operated zipper incorporates a pair of adjacent guide channels and a flexible fluid container in communication with an inflatable, elongated conduit. Rows of bulbs arranged on opposing sides of the conduit extend into corresponding guide tracks. Evacuation of the fluid such as air from the container fills the conduit with fluid forcing it to an extended position. The bulbs are simultaneously inflated and slid along the guide tracks to thereby pull them and frabric margins attached to the guide tracks together.

The present invention relates to interlocking structure for pulling separable fabric margins together and more specifically to a fluid operated zipper having interlocking half sections, parts of which disappear into a stored area when the margins are spread apart.

BACKGROUND OF THE INVENTION

Conventional zippers customarily incorporate mating metal teeth on adjacent zipper half sections that can be forcibly interlocked by a pull tab. When the zipper half sections are spread apart, the teeth remain exposed and are frequently sharp enough so that a person can inadvertently cut her hands.

Unlike these conventional zippers, the present invention relates to a fluid operated zipper incorporating interlocking half sections, portions of which are withdrawn from the fabric margins when the fabric margins are spread apart.

BRIEF SWUMMARY OF THE INVENTION

Briefly described, the present invention comprehends a fluid operated zipper for selectively pulling together adjacent fabric margins the are secured to a pair of adjacent guide tracks. A flexible fluid container positioned near one end of the guide tracks is placed in fluid communication with an inflatable, elongated conduit that is movable between a retracted position near the container and an extended position between the tracks. A pair of rows of inflatable bulbs are arranged on opposing sides of the conduit so that when fluid is evacuated from the container to the conduit, the bulbs are forced to slide along corresponding guide tracks. The sliding action of the bulbs as the conduit is inflated to fully extended position pulls the tracks and therefore the fabric margins together.

The guide tracks include compartments that enclose positioning beads attached to the bulbs. The positioning beads maintain the bulbs in proper alignment as they are being slid so that the bulbs are prevented from frictionally engaging adjacent walls of the guide tracks.

Preferably the fluid container is retained in a pocket which coacts with a manually operated collapsing means to flatten the container and thereby discharge fluid into the conduit for distribution to the bulbs.

BRIEF DESCRIPTION OF THE DRAWINGS

The benefits and unique aspects of the present invention will be fully understood when the following detailed description is studied in conjunction with the drawings in which:

FIG. 1 is a perspective fragmentary view showing portions of the fluid operated zipper and pair of fabric margins superimposed over the zipper;

FIG. 2 is a detailed cross section view taken through a pair of oppositely arranged inflatable bulbs, showing how the guide tracks and fabric margins are pulled together when the elongated conduit is fully inflated and extended;

FIG. 3 is a fragmentary view showing the fluid container retained in a pocket; and,

FIG. 4 is a detailed sectional view taken along line 4—4 of FIG. 3, showing how the fluid container and pocket walls are flattened when fluid has been evacuated to effect interlocking by the zipper components.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIG. 1, a fluid operated zipper **10** is shown incorporating a balloon or fluid container **11** fabricated from suitable soft, durable plastic material. Fluid container **11** is arranged in fluid communication with an elongated inflatable conduit **12** which, as shall be fully explained, is movable between a retracted position near container **11** and an extended position as shown in FIG. 1. Oriented on opposing sides of inflatable conduit **12** are rows of inflatable bulbs **13** and **14**. The bulbs in each row are preferably equally spaced from one another. Bulbs **13** and **14** are interconnected in fluid communication with conduit **12** by hollow necks **15** and **16** respectively. Hollow necks **15** and **16** serve as flow lines through which fluid from container **11** may be distributed into the bulbs. Rows of positioning beads **17** and **18** are connected to inflatable bulbs **13** and **14** respectively.

Associated with each row of bulbs is a guide track, only one track **19** of which is shown in FIG. 1. The tracks, preferably constructed from plastic material, are adhered or otherwise attached to fabric margins **21** and **22**. For the sake of clarity, margins **21** and **22** are only shown as being superimposed over portions of fluid operated zipper **10** in FIG. 1. The fabric margins may be associated with garments, curtains, draperies or any other item having margins that can be selectively drawn together by zipper or other interlocking device sections.

Referring now to FIG. 2, fabric margins **21** and **22** are shown secured to symmetrical wall portions of guide track **19** and the other guide track **23**. Guide tracks **19** and **23** are formed with compartments **20** and **24** respectively sized to house or enclose positioning beads **17** and **18**. Slide grooves **25** and **26** are formed on the inner faces of guide tracks **19** and **23** for receiving, in sliding engagement, hollow necks **15** and **16**. Compartments **20** and **24** define channels **27** and **28** through which connector strips **29** and **30** project for interlinking inflatable bulbs **13** and **14** with the positioning beads **17** and **18**. The internal surfaces of guide tracks **19** and **23** are coated with suitable non-skid material to minimize friction between these surfaces and the bulbs and beads. The positioning beads serve to keep the bulbs in alignment as they are being slid through channels **27** and **28**. By holding the bulbs in the central regions of the guide